THYROID FUNCTION, MORPHOLOGY AND AUTOIMMUNITY IN CHILDREN WITH TYPE-1 DIABETES MELLITUS

Thesis

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CONCLUSIONS

- T1D as an autoimmune disease can be associated with other autoimmune endocrine disorder.
- This study confirms the association between autoimmune thyroid dysfunction and T1D.
- The diagnosis of ATD should be based on the assessment of autoantibodies to anti-TG, These antibodies are positive in some patients of T1D whereas hormones related to thyroid function (FT4 , TSH) may be low, high or normal level in patients who are positive for thyroid antibodies.
- Biochemical thyroid dysfunction and thyroid autoimmunity may be evident in T1D who were apparently euthyroid.
- Thyroid autoimmunity seems to be particularly more common in girls with T1D.
- The presence of thyroid antibodies is associated with a higher risk for thyroid dysfunction in T1D patients.
- The autoimmune process in children with combined diabetes and thyroid disease appears to be more aggressive than in children with autoimmune thyroid disease but no diabetes.
- Hyperthyroidism is not common in DM children.
- Thyroid US seems to be a sensitive but non-specific method of ATD detection that is suitable for screening purposes as being non invasive method.

- Although the autoantibodies may persist for many years in the euthyroid patient before causing thyroid dysfunction but it should be used for screening type 1 diabetics because of the high prevalence of thyroid autoimmunity in diabetics compared to controls.
- Ultrasound hypoechogenicity is considered as being a valuable prognostic marker in autoimmune thyroid disease predicting the development of hypothyroidism.
- Higher frequency of ultrasound abnormalities in diabetics compared with controls.
- Thyroid ultrasonography has proven a useful and practical method for the assessment of thyroid size
- Diabetic children and adolescents with diabetes have markers of thyroid autoimmune disease, a few have thyroid dysfunction; many have thyroid antibodies, but may have abnormalities by thyroid US, the significance of this needing further investigation and on larger number.

RECOMMENDATIONS

- Screening for thyroid disease should be performed at diabetes onset in all patients with T1D.
- If the initial thyroid screening is positive, annual laboratory anti-TG Abs, TSH, and FT4 examination are necessary in order to detect early thyroid dysfunction and initiate treatment.
- Screening should be done even in absence of goiter or any clinical evidence of hypothyroidism for early detection.
- Because of being the simplest and less costy method ,screening by TSH still highly recommended at diagnosis and yearly . In children in whom TSH is affected, thyroid antibodies can be tested for.
- Thyroid ultrasound could be used as screening method for thyroid abnormality in diabetics , those with positive finding should be followed up even in absence of positive antibodies or dysfunction because they are more likely to develop thyroid disease on long term.
- Follow up of diabetics with positive thyroid autoimmunity or abnormalities in thyroid ultrasound is needed.

SUMMARY

The aim of the present study was to detect the frequency of thyroid autoimmunity and thyroid dysfunction in a cohort of Type 1 diabetics conveniently selected from the Diabetic Endocrine clinic at Fayoum University Hospital. Patients were included in the study as they presented to the clinic . We also aimed to study possible epidemiologic risk factors, including family history of autoimmune disease, parental consanguinity, age, sex, and duration of diabetes.

They included 30 females (60%) and 20 males (40%), there age ranged from 3 to14 years with mean 8.78 years (SD ± 2.82), duration of diabetes ranged from 0.2 to 7 years (mean 2.7 years SD ± 2.71), height standard deviation score (HSDS) from -2.4 to + 3.0 (mean -0.185 SD ± 1.8).

After thorough history taking and examination, the diabetics were screened for thyroid functions (FT4, FT3, and TSH), thyroid antibodies (anti-TG) and thyroid ultrasound was done. Laboratory screening revealed thyroid autoimmunity in 9 patients (18%) and abnormal thyroid profile with elevated TSH (consider significant if more than 5) in 6 patients (12%), compared to control group which revealed 2(4%) have positive antibodies , 1 (2%) with high TSH .

Ultrasound examination revealed increase thyroid volume in 5 (10%) patients and hypoechogenic thyroid parenchyma in 4(8%) patients. 6 patients (12%) in this study presented with high TSH (more than 5) 4 were females and 2 was male. On the other hand only one (2%) in the control group had hypoechogenic thyroid parenchyma.

There was a highly significant difference between diabetics with high TSH serum level and diabetics with normal TSH serum level regarding the mean TgAb level. Levels being higher in patients with high TSH level than patient with normal TSH level.

There is significant different between diabetics with positive antibodies to diabetics with negative antibodies as regard TSH serum level, there was a positive correlation between mean level of TG antibodies and duration of diabetes, HbA1c and TSH.

In this study 5 patients was presented with large thyroid volume by ultrasound examination, there was a highly significant difference between diabetic with large thyroid volume to diabetics with normal thyroid volume as regards the mean TgAb level. Levels being higher in patients with large thyroid volume.

In this study 4 patients of 50 presented with hypoechogenic thyroid parenchyma all of hypoechogenic cases with positive thyroid antibodies.